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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,053	08/20/2001	Rolf Heinemann	SBV-07699	6719

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EXAMINER	
FULLER, ERIC B	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/933,053	HEINEMANN ET AL	
	Examiner	Art Unit	
	Eric B Fuller	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4 – 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer et al. (US 5,080,056) in view of Sailer et al. (US 5,644,828) and Hammeke (US 4,724,299).

Kramer teaches alloying and coating the interior walls of cylinder bores with a wear resistant material (column 2, lines 12-16) by thermal spraying (column 2, lines 17-29). Kramer further teaches that the powder material used for coating/alloying is an aluminum/silicon alloy (column 4, line 7). The coating is deposited onto and alloyed into the substrate. The reference cited examples of plasma spraying and arc spraying as suitable forms of thermal spraying, but does not limit the invention to such. However, the reference fails to explicitly teach laser spraying as a suitable form of thermal spraying.

Sailer teaches that plasma spraying, arc spraying, and laser spraying are all equivalent forms of thermal spraying. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize laser spraying as the method of thermal spraying in Kramer with a reasonable expectation of

success, as Sailer teaches equivalence. However, Sailer fails to teach how the method of laser spraying is performed.

Hammeke teaches a method of laser spraying wherein the coating powder is fed through a laser apparatus such that the apparatus may be used to coat complexly shaped substrates uniformly and quickly (column 5, lines 17-25). The powder is fed coaxially with the laser beam and is converged on a common focal point with the laser beam that creates a melt pool in the substrate (column 2, lines 15-20). One of ordinary skill would recognize that since the powder stream and laser are one elongated device, such an arrangement would be ideal for fitting into the small diameters bores of Kramer. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a laser spraying method such as that taught by Hammeke in order to form the alloy/coating of Kramer. By doing so, one would have a reasonable expectation of success, as Sailer teaches the equivalence of laser spraying with other forms of thermal spraying. Modifications to the apparatus of Hammeke so that the inner wall of a cylinder is coated as opposed to an area directly below the nozzle, such as deflecting the laser beam and powder streams towards the wall, are all within the skill of one practicing in the art when taken in view of figure 2A of Kramer.

Additionally, Kramer teaches that the sprayer is inserted coaxially into the cylinder and rotated around the central axis of the cylinder while being moved axially (column 3, lines 44-66). One of ordinary skill would recognize that in order to perform the process suggested above (using laser spraying as the thermal spraying means), the

laser must follow the same path. This results in the configuration of claims 1, 13, and 15.

As to claims 8-12, the depth of alloying and thickness of deposition is not explicitly taught by Kramer. However, to use a depth and thickness that provides adequate protection, while still providing clearance for the piston to fit in the cylinder, would have been obvious. To determine the process parameters such as number of passes, laser power, and speed of pass would have been within the skill of one practicing in the art through routine experimentation in order to achieve a sufficient thickness.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer et al. (US 5,080,056) in view of Sailer et al. (US 5,644,828) and Hammeke (US 4,724,299), as applied to claim 1 above, and further in view of Pfeffinger et al. (US 6,221,504 B1).

The above-cited references are used for teaching the limitations of claim 1, but they fail to teach using an additional laser treatment in order to deposit oil pockets. However, Pfeffinger teaches that additional laser treatments may be used to deposit lubricants into the interior walls of cylinder bores in order to increase the tribological characteristics of the coating (column 3, lines 35-40; abstract). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use additional laser treatments in Kramer in order to deposit oil pockets such that the tribological characteristics of the coating/alloy is increased.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer et al. (US 5,080,056) in view of Sailer et al. (US 5,644,828) and Hammeke (US 4,724,299), as applied to claims 13 and 15 above, and further in view of Beyer et al. (US 6,197,386 B1).

The above-cited references are used for teaching the limitations of claims 13 and 15, but they fail to teach the use of mirrors to direct the laser beam to the inner wall of the substrate. However, Beyer teaches the use of a mirror in order to deflect a laser beam such that it hits a desired location on a substrate (figure 1, reference 4). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a mirror to deflect the laser beam. By doing so, the laser beam is directed to the desired location.

Response to Arguments

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In particular, the applicant argues that Kramer fails to teach a laser that is moved in a particular pattern. The applicant argues that the laser in Hammeke is stationary. These arguments are not found convincing. It is noted that the thermal spray pattern in Kramer is the same as the applicant's claim. The only difference

resides in that the thermal means is different. Sailer and Hemmeke teach and give motivation to use a laser as the thermal means. As Kramer is the primary reference, to make the obvious modification of using a laser as the thermal means, one of ordinary skill in the art would retain the movement all ready taught by Kramer. Specifically, by using a laser as the thermal means in Kramer, the applicant's claims are read upon.

The applicant argues that because the tribological requirements for the substrate in Sailer are different than the cylinder bearings of Kramer, one of ordinary skill would not consult the Sailer reference. In response to applicant's argument that Sailer is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Kramer teaches applying a tribological coating by thermal spraying and Sailer teaches applying a tribological coating by thermal spraying. Although the requirements of the coating may differ, one of ordinary skill in the art would recognize that by Sailer teaching that laser spraying and plasma spraying are equivalent forms of thermal spraying, that laser spraying would achieve an expectation of success in the process taught by Kramer.

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Specifically, Kramer teaches plasma as the thermal means in a thermal spraying method. The plasma is directed towards a wall and moves in accordance with the powder feeder. Sailer and Hemmeke teach using a laser as the thermal means. By using a laser as the thermal means in the process taught by Kramer, the laser would be directed towards the wall and move in accordance with the powder feeder. Additionally, any deflection of the laser such that it is directed towards the wall, as is required by Kramer, would have been obvious in order to achieve such a requirement.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (703) 308-6544. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck, can be reached at (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is 703 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

EBF

SHRIVE P. BECK
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